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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,672	01/21/2004	Stephen N. Sanderson	70226-9101	5156

7590 10/18/2006  
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EXAMINER	
RUSSELL, CHRISTINA MARIE	
ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/762,672

Applicant(s)

SANDERSON, STEPHEN N.

Examiner

Christina Russell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

In view of the appeal brief filed on 14 September 2006, PROSECUTION IS HEREBY REOPENED to incorporate claim 6, 8, 10 and 11 into the 35 USC § 103 Rejection.

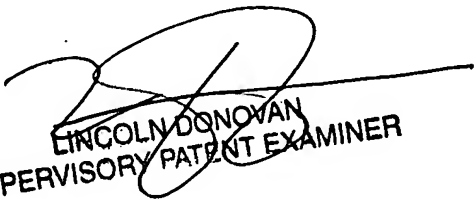
Grounds for rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER

Also, the Examiner would like to bring to the appellant's attention that the appeal brief must be submitted in the proper format including the proper headings as set forth in Rule 41.37 of the MPEP.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by the previous US patent to Sanderson (4,790,230).

3. In terms of claims 1 and 2, the previous Sanderson patent teaches a system for a musical keyboard type instrument comprising an insertable sensor, further comprising a sensing strip, that is placed at the back of the keys, both black and white, hidden from view, where the edge of the keys would meet the edge of the fallboard in the "up" position on a standard acoustic piano (see Figures 1 and 2, and column 7, lines 44-48), to sense their movement and sense and transmit other keynote expressions such as depression and velocity (see column 1, lines 18-20, column 4, lines 11-16, column 5, lines 39-42, and column 9, lines 12-15). Said insertable sensor also does not require the

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disassembly of the keyboard instrument, since it is taught that is portable and can be transferred from one keyboard to another, and that the shape allows it to be inserted into any keyboard type instrument with standard size keys (see column 3, line 65 – column 4, line 6, column 4, lines 48-50, and column 8, lines 42-44).

4. As for claim 3, Sanderson further teaches said sensing strip having one or more sensors connected per key to sense a proportional amount of movement (see column 4, line 66 – column 5, line 3).

5. As for claims 4 and 5, Sanderson teaches all the above claimed elements of claim 1, including the sensor comprising an energy or voltage contact that produces an electrical signal along with an adjacent optical emitter and receiver that converts the energy provided by the keys into said electrical signal (see claim 1, lines 25-34, column 5, lines 43-49, column 7, lines 26-28, column 8, line 62-column 9, line 8, column 9, lines 58-60 and column 11, lines 17-26).

6. As for claims 8, 10 and 11, Sanderson has previously taught, referring to Figure 2, of a strip or keyboard mold connected to the couplers that sense the movement and provide energy and are furthermore connected to said sensing strip. This mold and sensing strip have both an emitter and receiver coupled together to convert and transmit a field strength, or displacement current, to a corresponding electrical signal or voltage, and comprises multiple optical couplers and electrical contact points that switch on or off in relation to key depressions (see column 5, lines 3-17, 29-32 and 43-49, and Figures 4 and 5).

7. As for claims 12 and 13, it was previously stated above that the circuitry of the system can further process not only key depression but also key-note ON/OFF information and velocity (see references presented for claims 1 and 2).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Fields (5,237,125).

10. Sanderson teaches all the above claimed elements of claims 1 and 2, except for the incorporation of a keyboard mold or strip comprising a flexible, piezo-electric element to convert mechanical energy to either a negative or positive electrical signal proportional to the displacement of the keys. Fields teaches such a flexible, piezo-electric element (see column 2, lines 34-40, and column 4, lines 30-35). Sanderson has previously taught, referring to Figure 2, of a strip or keyboard mold connected to the couplers that sense the movement and provide energy and are furthermore connected to said sensing strip. This mold and sensing strip have both an emitter and receiver

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coupled together to convert and transmit a field strength, or displacement current, to a corresponding electrical signal or voltage, and comprises multiple optical couplers and electrical contact points that switch on or off in relation to key depressions (see column 5, lines 3-17, 29-32 and 43-49, and Figures 4 and 5). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to further advance the prior sensors with an additional sensitivity device that consists of only a thin, flexible film that can be incorporated into the already applied sensors placed over the keys. These piezo-electric devices of Fields comprise similar sensors as already stated and further detect velocity and key depressions just as the sensors of the previous Sanderson invention.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Fields (5,237,125), in further view of the US patent to Lee (6,472,589).

12. Sanderson and Fields teach all the above claimed elements of claims 1, 2, and 6, except for the mold and sensing strip comprising a magnetically coupled emitter and receiver to convert magnetic fields to electrical signal. Lee teaches such a magnetic system (see column 5, lines 6-15). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to mount such a magnetic system of Lee at the back of the keys, positioned in relation to the sensor (see column 1, lines 28-31), to allow for better measure and response times to the deviating velocities, and additional keyboard information.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the previous Sanderson patent in view of the US patent to Brull (4,818,132).

14. Sanderson teaches all the above claimed elements of claim 1, except for the use of an insertable protector for the protection of the sensors from ambient light. Brull teaches such a protector. Simply stated in the abstract of Brull, he teaches the use of a similar type sensor but with an additional sweep device to protect the sensors from ambient light. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the sweep device of Brull into the sensing strip in the previous Sanderson patent. It would have been obvious to add a protective cover to Sanderson's already patented sensor strip, comprised of similar sensors as stated by Brull, since protection from such things as sunlight and overhead room lights, is a common factor taken into consideration when designing optical sensors.



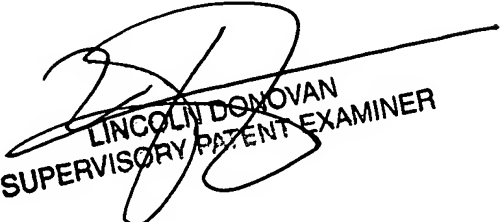
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Russell whose telephone number is 571-272-4350. The examiner can normally be reached on Mon-Fri, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on 571-272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CR  
10/5/2006

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER